U.S. DEPARTMENT OF COMMERCE
National Technical Information Service

PB80-101371

Information Transfer in the Office of Research and Development

Arthur Young and Co., Washington, DC

Prepared for

Environmental Protection Agency, Washington, DC Office of Research and Development

Aug 79

PB80-121371

EPA-600/9-79-030

August 1979

INFORMATION TRANSFER IN THE OFFICE OF RESEARCH AND DEVELOPMENT

by

Arthur Young & Company
Washington, D.C.

Contract No. 68-01-4640

Prepared For

OFFICE OF RESEARCH PROGRAM MANAGEMENT
OFFICE OF RESEARCH AND DEVELOPMENT
U.S. ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U.S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO.	2.	3. RECIPIENT'S ACCESSION NO.
600/9-79-030		PB 80-101371

4. TITLE AND SUBTITLE	5. REPORT DATE
INFORMATION TRANSFER IN THE OFFICE OF RESEARCH AND DEVELOPMENT	August 1979
	6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S) Steven Stryker, Hugo Becker, Paul Chandler, Angela Griffiths	8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS Arthur Young & Company 1025 Connecticut Avenue Washington, DC	10. PROGRAM ELEMENT NO.
	11. CONTRACT/GRANT NO.
12. SPONSORING AGENCY NAME AND ADDRESS Office of Research and Development U.S. Environment Protection Agency Washington, DC	13. TYPE OF REPORT AND PERIOD COVERED Final Report
	14. SPONSORING AGENCY CODE EPA/600/00

15. SUPPLEMENTARY NOTES

16. ABSTRACT

This report presents the results of a study conducted to determine the effectiveness of the office of Research and Development's (ORD) information transfer activities. The type and volume of activity is reported as well as costs, intended and actual audiences, and the method used for determining each activity's public demand. Activities include journal articles, speeches, conferences and seminars, technical reports, and newsletters. Each of ORD's 15 laboratories and 4 headquarters offices were interviewed. For calendar year 1978, there were 1,087 information activities reported at an estimated total information transfer cost of over $6 million. This does not include the strictly technical project reports, of which there were over 800 published. The conclusion reached was to establish a uniform technical information policy and to implement this policy through a technical information guide.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
	Technical Information Research results Census Journals Seminars Bibliography	

18. DISTRIBUTION STATEMENT	19. SECURITY CLASS *(This Report)*	21. NO. OF PAGES
	Unclassified	45
Release to public	20. SECURITY CLASS *(This page)* Unclassified	22. PRICE PC-A03/MF-A01

EPA Form 2220-1 (9-73)

TABLE OF CONTENTS

I.	BACKGROUND OF THE STUDY	1
	THE CONCERNS OF ORD MANAGEMENT	1
	THE PROJECT	2
	THE ISSUES	3
II.	AN OVERVIEW AND EVALUATION OF ORD INFORMATION TRANSFER ACTIVITY	4
	OVERVIEW OF THE EXISTING PROCESS	4
	THE ORGANIZATIONS INVOLVED	6
	THE INFORMATION ACTIVITIES	14
	PROCESSES FOR OTHER ACTIVITIES	19
	INTENDED AUDIENCE	18
	COST OF INFORMATION TRANSFER ACTIVITY	22
	EVALUATING THE ORD ACTIVITIES	22
	INFORMATION TRANSFER PROGRAM DEFINED	22
	PROGRAM CRITERIA	25
	PRINCIPAL DEFICIENCIES	25
III.	RECOMMENDATIONS	29

APPENDICES

A. ORD INFORMATION CENSUS FOR 1978

B. SUGGESTED CONTENT FOR THE PROPOSED PROGRAM MANUAL

LIST OF EXHIBITS

EXHIBIT		FOLLOWS PAGE
I.	GENERAL INFORMATION TRANSFER PROCESS IN 1978	5
II.	ORD INFORMATION TRANSFER ACTIVITY AS BY ORGANIZATION	13
III.	ORD INFORMATION CENSUS VOLUMES REPORTED	21
IV.	INTENDED AUDIENCES FOR ORD INFORMATION TRANSFER PRODUCTS	23
V.	ORD INFORMATION ACTIVITY COST SUMMARY PRELIMINARY ESTIMATE	24

CHAPTER I

BACKGROUND OF THE STUDY

The Office of Research and Development (ORD) is the research arm of the Environmental Protection Agency. As such, it is responsible for accomplishment of a wide range of both developmental and applied research into areas of concern to EPA and to organizations (both public and private) responsible for protecting public health and for protecting or accomplishing improvement in our environment. While research is the primary function of this organization, the product of these efforts is knowledge; answers to questions which have generated the research activity. No matter how accomplished the endeavors of ORD, they are of little benefit unless the information generated is effectively transmitted to those who can use it in improving and protecting the quality of our physical environment. Thus the effective transfer of information generated by research is the only way that ORD can truly contribute to realizing the objectives of EPA.

Each research project of ORD results in a report, a project report which reflects both the methodology and the results of the research. These documents, which are required and basic to the research process, are primarily technical/scientific in nature and reflect the orientation and the language of the researcher. They may not be useful in communicating either the results or the implications of the research to other persons who lack the training or orientation of the scientific community. As a result, a variety of other mechanisms are used to transmit (transfer) research results to industry, other researchers, decision makers at all levels of government and to the public. These activities and products must be designed to be responsive to the needs of the various audiences addressed and mechanisms must be in place to assure access to these materials for reference in future research and analysis or synthesis of results.

THE CONCERNS OF ORD MANAGEMENT

The importance of effective information transfer is widely recognized at all levels of the ORD organization and significant amounts of the resources available to ORD are applied in information transfer activity. It is also widely recognized, however, that there is not, currently, a clear definition of policy or practices by which management can assure that these activities are effectively or efficiently directed to achieve their objectives. There is, in fact, only minimal information available to ORD management as to:

- the types and amounts of information transfer activity;
- the processes and authorities by which information transfer is accomplished;
- whether or not these activities are capable of assuring effective transmittal of information to proper audiences; and
- the extent to which the processes could be judged cost effective.

There is a concern that information transfer in ORD cannot be characterized as "a program", but that it is accomplished as a number of disparate actions -- effected by anyone of the large number of organizations in ORD -- without common objecives, direction or basis for management control.

THE PROJECT

As an initial step in addressing these concerns, ORD acquired the services of Arthur Young & Company to:

- Determine the level and types of information transfer activity occurring in ORD.
- Determine the processes by which they are accomplished;
- Estimate the current cost of these activities, and
- Evaluate the information gathered and to make recommendations as to how management of these activities might be improved to better realize the information transfer objectives of ORD.

Two information gathering techniques were utilized in the performance of this study; a questionnaire mailed to the ORD offices and laboratories requesting data on information transfer activities and interviews with individuals from those organizations involved in information transfer.

The "ORD Information Census for 1978" questionnaire was sent to offices and laboratories in ORD requesting definition of all such activities accomplished during 1978. No information was requested on "Project Reports" as it was assumed that adequate information was available from the existing record systems and that the processes associated with generation and distribution of such reports was well known and understood (these assumptions were, in several cases, unfounded).

1,118 of these forms were completed and returned for review by the Project Team (a copy of the form is included as Appendix A to this report). Later inquiries by the Project Team confirmed that the Census data generated by these forms is fairly representative of the types and volumes of information transfer activity in ORD.

In addition, the Project Team interviewed approximately 220 individuals who had been responsible for some aspect of ORD's information transfer efforts during 1978. The objectives of these interviews included: (1) confirmation of information generated in the census; (2) gaining understanding of the processes and environments within which these activities occur, and (3) to gain insight into the attitudes, concerns, and problems of the individuals responsible for accomplishment of this critical aspect of ORD's responsibility within EPA. Persons interviewed included the staff office directors, the Deputy Assistant Administrators, the 15 Directors of the laboratories, Technical Information Coordinators, and several of the key generators (researchers) of these activities in each office or laboratory.

This report is a product of the analysis of the information derived from sources within ORD. We now believe that much would be gained from extending such a review to sources outside of ORD, allowing clarification of the relationships between ORD and the "Program Offices" headed by the other Assistant Administrators. We suggest that expanding coordination of the information transfer activities among these offices could enhance the capabilities of ORD to communicate with its constituency and improve the level of understanding of the "Program Offices" as to the activities of ORD and ORD's capability to provide support.

THE ISSUES

In retrospect, having completed their research, the Project Team found that the issues that needed to be addressed were even more basic than an

evaluation of the effectiveness or the cost of information transfer in ORD. This report will not, nor could it, answer all of the policy questions that regularly recurred during this study. The reader, however, should read this document with the following questions in mind:

- Should information transfer in ORD take place in a structured "program" type environment or continue to occur as the product of disparate or individual actions?

- Can ORD continue to speak only to its own constituancy without full consideration of the priorities of concern of the "other" offices of EPA?

- Is the Scientific/Technical community the principal constituancy of ORD; should ORD be addressing a wider audience and who should this be?

- Considering the level of resources applied to these activities, that might be otherwise applied to performance of research, should each such activity be fully justified in terms of its contribution to realizing the ultimate objectives of EPA, the protection of our physical health and environment? and finally —

- How can we assure that the information generated by these activities can be effectively retrieved so that it can be considered in future research or in development of programs or policy?

CHAPTER II

AN OVERVIEW AND EVALUATION OF ORD INFORMATION TRANSFER ACTIVITY

Information transfer is a means of "outreach" communicating. For purposes of this study, the term refers to all of those activities by which ORD transmits to persons or organizations, external to its own purview, the products of its research efforts, analysis of the implications of its work, descriptions of its activity or even requests for support or assistance in support of its work.

ORD, as the research arm of EPA, operates on a budget of approximately 1/3 of a billion dollars per year in the performance of over 2,000 research, development and demonstration projects. These projects are performed by staff of the fifteen research laboratories and by contractors, grantees and other governmental organizations retained by ORD to extend the capabilities of its laboratories.

Nearly all of the organizational units of ORD are involved, at one time or another, in the development, performance, analysis, or distribution of information transfer products. These information transfer activities are many and varied in medium, objective, and audience: from project reports and contributions to technical journals to orientation talks on the functions of the laboratories; for purposes ranging from contributions to the scientific state-of-the-art to promoting support for a demonstration project; to audiences which include such diverse groups as members of Congress and State and local government officials and school children.

The first section of this chapter provides an overview of the information transfer processes that exist generally throughout ORD now. The second summarizes the characteristics of the various information transfer activities of the laboratories, the Headquarters Offices, and those of the Center for Environmental Research Information (CERI). The third section is a presentation, by individual product type, of processes, responsibilities, cataloging, and costs, and comments made by persons interviewed during the study. In the final section, there is an evaluation of the conditions discovered during the study.

OVERVIEW OF THE EXISTING PROCESSES

One principal finding of the study is that while there is a great deal of information transfer activity throughout ORD, there is no consistent ORD approach to information transfer processes. This is discussed in more depth in the evaluation section and in the recommendations, but what this means, in terms of an overview of the existing process, is that the laboratories and offices of ORD have wide discretion in determining the types of activities they wish to perform (or not perform) and how these will be accomplished.

The flow chart on the following page is not intended as a detailed process definition, but it generally reflects how the majority of information transfer activities were reported to be carried on in ORD, particularly in the laboratories where approximately 90 percent of all products or activities were generated. Typically, project officers or researchers initiate an information transfer product development effort on their own, when they feel there is something significant in their research to merit such effort. The judgments of these individuals was reported as generally respected, and only pro forma approval, if any, was required from supervisors.

The exceptions noted were the organization of major conferences or the publishing of a high-cost special report

General Information Transfer Process in 1978

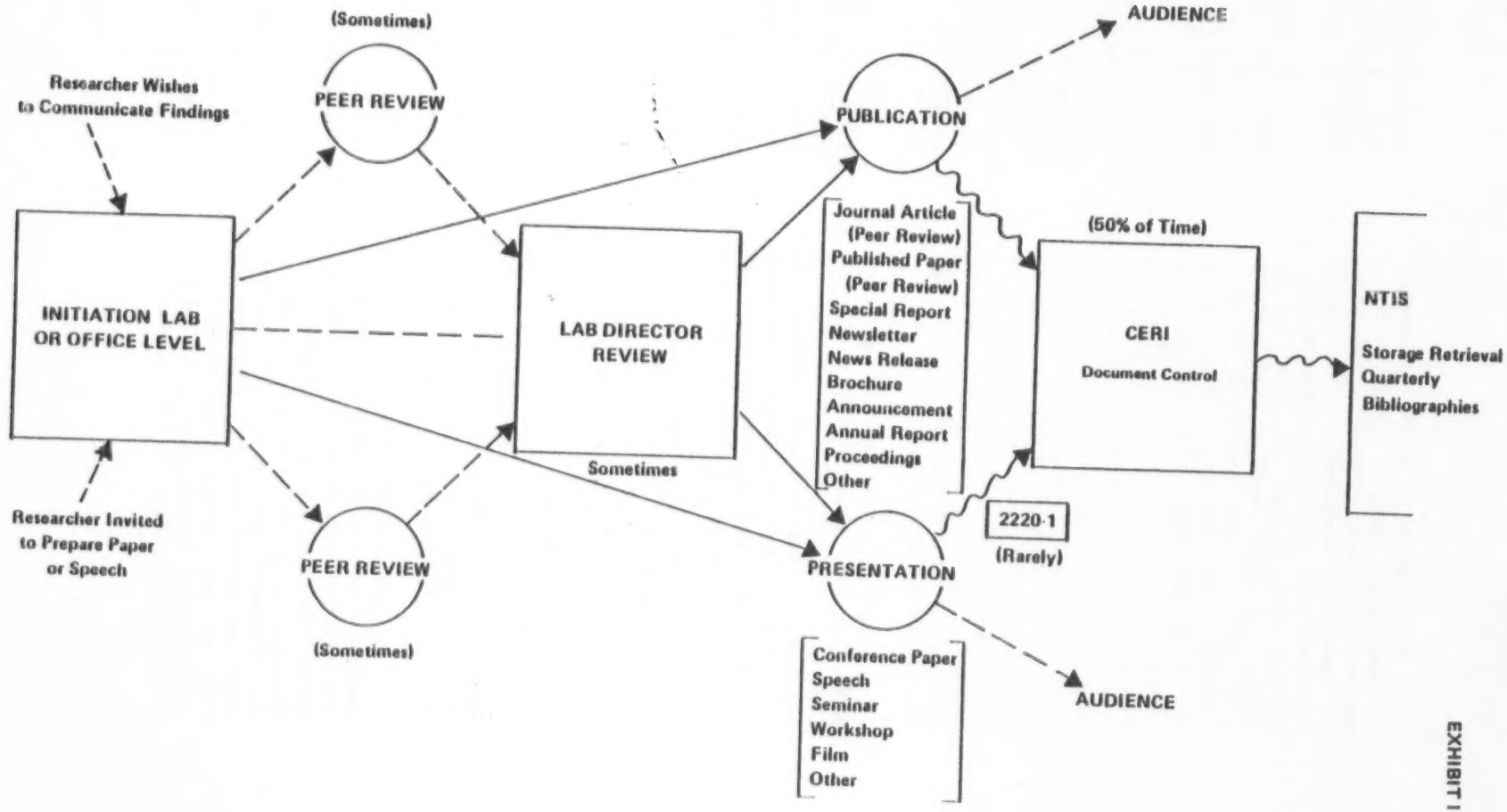

EXHIBIT I

along the lines of an executive summary. In these cases, chain of command approval was required, usually through the Office or Laboratory Director and perhaps to the level of Assistant Administrator. Journal articles and published papers, since they would receive later outside peer review, were supposed to have internal review, but this internal review was often pro forma. The initiator was largely on his or her own, with technical assistance from the Technical Information Coordinator at each laboratory and office. The Technical Information Coordinator assists and advises on product selection, format, editing, printing, cataloging and distribution. In most cases, however, it appeared that the initiating project officer or researcher had the final say on all phases of the process.

The distribution of printed products was usually based on the laboratory's mailing list, and any additional recipients were added by the initiator (almost all project officers claimed that they maintained their own personal lists in addition to the main laboratory or office list). All laboratory lists, incidentally, included the EPA mandatory list which includes EPA managers, Federal Libraries and selected agency heads. However, analysis of products received at CERI and Headquarters showed that the mandatory list apparently is not always used for special products distributed by the laboratories, especially if they have not been coordinated with CERI and do not carry an EPA publication number.

For non-document activities such as smaller conferences, seminars, speeches and workshops, the audiences were usually quite small, in the 20-40 range. Those selected to attend are usually invited by telephone and letter, and included only the specialists the initiator and his or her colleagues felt were sufficiently knowledgeable to benefit from and contribute to the convocation. Arrangements for these activities were usually authorized at the office or laboratory level and may or may not have involved the TIC or the director.

ORD sources interviewed estimated that, once the information product or other type of activity is accomplished, less than 50 percent of all activity is reported to a national bibliographic reference service. In most cases, individuals (and some TICs) in offices and laboratories kept good internal records of their information transfer activity. However, printed materials (special reports, etc.) were not uniformly reported to CERI and almost none of the "non-product" activity (meetings, seminars, etc.) was reported to CERI or any other central point in ORD.

The one exception to this generalization on printed matter is the ORD project report. Each project officer, contractor, grantee, or lead officer on an interagency agreement project, is required to produce a project report for ORD at the conclusion of the project. The report is the historical public record of what is done on the project. Each report is reviewed and approved by a project officer, assigned an EPA number by CERI and sent to NTIS. It is the current practice to print and distribute additional copies to the mandatory list, to the existing laboratory or office mailing list plus special mailings requested by the author(s) and project officer, and (sometimes) to store additional copies for secondary distribution in response to later requests.

THE ORGANIZATIONS INVOLVED

In this section we present a capsule description of the actors involved in ORD information transfer. We begin with the people who do the most research and generate the most information transfer activity -- the laboratories. We then

move on to Headquarters, which includes the four Deputy Assistant Administrators, the special offices, and the Assistant Administrator. The final summarization of activity concerns CERI in Cincinnati and its current role in information transfer.

THE FIFTEEN ORD FIELD LABORATORIES

The principal group of actors in technical information transfer are the ORD Laboratories. To consider them as a group, however, would be misleading. It is difficult to generalize about these 15 distinct research entities. Each laboratory and research staff has its unique personality, fields of specialization, and record of accomplishments and problems. We will make a brief statement of findings about the activities of each of them before proceeding to the detailed product-by-product discussion. The abbreviations used will be "ERL" for Environmental Research Laboratory; "HERL" for Health Effects Research Laboratory; "MERL" for Municipal Environment Research Laboratory; "IERL" for Industrial Environmental Research Laboratory; "EMSL" for Environmental Monitoring and Support Laboratory; "ESRL" for Environmental Sciences Research Laboratory; "ECAO" for Environmental Criteria Assessment Office; and "RTP" for Research Triangle Park, North Carolina. The laboratories are presented alphabetically by location.

At the conclusion of this section an exhibit provides a summary of the activity statistics for all of the laboratories.

Ada, Oklahoma ERL

The Ada laboratory is chartered to conduct research into air, land, and water use and pollution as it impacts on agricultural uses. In addition to generation of a small number of journal articles, Ada organizes a number of conferences and seminars during the year for universities and farmers' groups. One unique information transfer feature was close cooperation betwen Ada researchers and county agricultural agents to instruct farmers on methods to reduce run-off by better agricultural practices. While small in scale and impact, this idea could serve as a model for cooperation among other agencies which could lead to other information transfer products on interagency cooperation in environmental improvement.

Ada reported 7 published papers, 4 journal articles, and 10 conferences/seminars/workshops and these reflected 51% of the 41 actions reported. 40 project reports were prepared.

Athens, Georgia ERL

The mission of ERL Athens is to develop methods to identify and measure environmental pollutants and their transportation, transformation, and fate. Much of the laboratory's work is conducted through interagency agreement. Information transfer activity occurs through seminars, workshops, occasional reports to peer group audiences, and work with agricultural extension service agents.

Athens reported 57 actions of which 25 were news releases. 10 journal articles were published and 12 conferences/seminars/workshops were sponsored. Athens produced 20 project reports.

Cincinnati. EMSL

The primary mission of EMSL is to perform research and to develop monitoring and analytical methods for measurement and identification of biological and chemical pollutants in recreational, fresh water, and drinking water. EMSL uses a variety of techniques to communicate their results in order to reach as wide an audience as feasible. The laboratory believes that they have been able to reduce normal publicaton delays by shortening review time, and by use of firm contracts for production of information transfer products.

EMSL reported 57 actions. 19 of these were published papers, 10 were speeches and six were journal articles. These made up more than 1/2 of all actions. 16 project reports were prepared.

Cincinnati HERL

Cincinnati HERL is charged with investigating harmful health effects from exposure to biological and chemical agents in land use and recreational, drinking, and wastewater. Recognizing the sensitivity of their research on current regulations since their research directly effects human health, HERL researchers relied chiefly on peer reviewed journal articles and published papers. Information transfer at HERL was limited somewhat by a number of changes in priorities and research levels. For example, when toxic chemicals or other emergency work came up, information transfer had to be put aside.

HERL reported 22 actions during 1978. 8 published papers and 5 journal articles made up almost 60% of these. 16 project reports were completed.

Cincinnati IERL

IERL concentrates research activity on developments of methods to control pollution resulting from energy extraction, processing, and use; mineral extraction and processing; and industrial processing. IERL's activity is characterized as engineering applied research, and close communications have been established with the industries involved. Much of the information transfer was direct and informal, but the primary published products were design manuals used to thoroughly describe a new process to engineers, and process summary reports to summarize that manual for managers and interested audiences. The laboratory also produces films to illustrate new pollution control processes.

IERL reported 27 actions during 1978. Seven films accounted for 1/4 of the information transfer activity reported by IERL. Eight seminars and five journal articles were also reported. IERL reported 91 project reports for 1978.

Cincinnati MERL

The MERL protects community health and environment by conducting research on prevention, control, and treatment of pollutants from sewage and wastewater, solid and hazardous wastes; and on decontamination and disinfection of public drinking water. MERL's management is committed to the idea that information is their principal product in support of EPA activity. To this end, MERL frequently

distributed inquiry cards to enlarge its list of audiences interested in receiving their information products.

MERL reported 214 information transfer actions for 1978. 1/2 of reported information activity was involved with unpublished oral presentations (speeches). Journal articles (24) and published papers (45) accounted for more than a quarter of the activities reported. MERL completed 93 project reports during the period.

Corvallis, Oregon ERL

Corvallis ERL is responsible for research into the effects of land, air and water pollution on water and marine ecosystems. The chief concern of the persons interviewed here was that it was already difficult to produce the journal articles, published papers, seminars and workshops that they felt were needed while the resources that are ordinarily applied to information transfer are being reduced. The project officers indicated that a greater effort should be applied in informing the interested public of their activities rather than just specialized audiences. They felt that more resources than they currently had available and assistance from contractors, CERI, or Headquarters would be required to accomplish an increase in special reports or larger conferences. A direct quote from one of the researchers was: "We do lots of journal articles, and that's good and useful, but what we need are a few Ladies' Home Journal articles."

Corvallis reported 41 actions in 1978. 29 of these were news releases. 6 published papers and 5 journal articles were also accomplished. ERL completed 38 project reports.

Duluth, Minnesota ERL

The mission of the Duluth ERL is to specialize in research on the effects of pollution on fresh water aquatic life, and biological and ecological effects on fresh water ecosystems generally. Duluth's main information product was journal articles to reach scientific peers and support EPA regulatory activity, but it is also committed to public and scientific information transfer in the form of locally produced films, open-houses, seminars, and topical brochures.

Duluth ERL reported 86 actions in 1978. Journal articles (24) and published papers (10) were dominant but ERL also produced 15 special reports/publications. 16 project reports were issued.

Gulf Breeze, Florida ERL

Gulf Breeze studies the effects of hazardous organic and inorganic pollutant exposure on marine, estaurine, and coastal ecosystems. Gulf Breeze reported 11 information transfer actions designed primarily for audiences of marine biologists and realted scientific fields. Five conferences/workshops and three published papers were included. Eight project reports were completed.

Las Vegas EMSL

The Las Vegas laboratory is involved in research into monitoring methods and reaction results of atmospheric pollutants. Las Vegas has a facility for producing its own reports for the interested public.

Because of its location and facilities, the Las Vegas laboratory often serves as the host site for conferences sponsored by other EPA organizations.

Las Vegas reported 91 actions during 1978. Published papers (22) publications/special reports (27) and conferences/seminars/workshops (25) were the principal types of effort. EMSL completed 43 project reports.

Naragansett, Rhode Island ERL

Narragansett ERL is dedicated to the study of pollution effects on marine ecosystems. In 1978, approximately 70% of the Narragansett reported information transfer activity involved presenting papers at conferences and symposia which were later published (12 reported). 2 project reports were completed.

RTP, EMSL

EMSL's primary role at RTP is to develop analytical methods and standards for air pollution control monitoring. In actuality this role translates to extensive direct support for a segment of the Office of Air and Waste Management. Because almost all of the effort applied to direct field support, there appears to be little time available for preparing journal articles or published papers. The researchers felt their work was very valuable now, but they would prefer more time so they could more actively involve themselves in preparing information transfer products. As one manager put it "We can't tell from peer review if we're doing all right or not. Since we spend all our time supporting the program office, the only way we know we're doing a good job is if no one is bitching."

RTP, EMSL reported 18 activities of which 2 were published papers, 4 were journal articles, and 3 were publications/special reports. 19 project reports were prepared.

RTP, ESRL

ESRL's mission at RTP is to determine effects of air pollution on urban, regional, and global environment and how it affects air, land and water use. RTP, ESRL provides direct support to program offices. ESRL's reported 46 information transfer activities including journal articles (29) and published papers (5). 66 project reports were completed.

RTP, HERL

HERL's goal is to identify and measure air pollutants and their transport, transformation, and fate, involving health effects. HERL's main information transfer activity is supporting the program offices directly, especially the Office of Toxic Substances. In general, HERL did not recognize much need for non-specific, public-oriented products and was strongly opposed to the time and effort required for most standard project reports.

From the analysis of findings, HERL reported 171 activities. These included published papers (64), journal articles (66) and conferences/seminars/workshops (19). 50 project reports were prepared.

RTP, IERL

IERL's several missions include environmental assessment of energy and industrial processes, and helping develop control technology processes to meet standards for air, water, solid waste, and pesticides. IERL has one of the largest funding bases of all of the laboratories and this is reflected in their information transfer activity. IERL produces the whole spectrum of information products including films and videotapes. They have close relations with industry through symposia and information contacts. IERL reports a higher use of CERI for information transfer support, and CERI just recently produced a special report for them. Researchers at IERL felt a greater need for discretion in selecting standard project reports for full scale publication, as did many other laboratories. One source is quoted as saying: "Only about 5-10 percent of project reports are worth anything to anyone. Those should be made into good reports with wide distribution. The rest should be sent to NTIS for the public record."

IERL reported 167 activities during 1978. Published papers (48), speeches (15) and conferences/seminars/workshops (25) made up most of this total. 113 project reports were prepared.

ECAO, RTP (Air) and Cincinnati (Water)

ECAO's are not laboratories in the ORD context. They are responsible for developing health assessment and criteria documents for EPA. Their staff of scientists accomplishes this by reviewing and synthesizing all available state-of-the-art knowledge about a particular pollutant from a variety of sources including ORD, the scientific/academic community, industry and others. The result of this monumental effort is usually a single volume Criteria Document that is a distillation of all that is currently known about that pollutant. Following published notice and public hearings, the document becomes the legal reference for that pollutant and its effects.

While Criteria Documents are not information transfer products in the usual sense, there were two reasons for including ECAO's efforts here. First, the staff was just beginning to develop an active audience by sending a questionnaire to all who might be interested in summaries of ECAO work. Information transfer products were expected as soon as the urgency of Criteria Documents production subsided. Secondly, ECAO was staffed by excellent researchers experienced in developing coherent, defensible overviews of complex subjects. What they have learned can be invaluable to the staff of the Office of Technical Information, CERI and the offices and the laboratories. They have gained important experience in preparing information for transfer that requires aggregation of the results of a number of research projects while keeping an overall perspective always evident.

Of the 18 activities reported, 8 publications/special reports were most "important". No project reports were generated.

HEADQUARTERS (Deputy Assistant Administrators, Special Office Directors, and the Assistant Administrator for ORD)

At the top of the organization, the Assistant Administrator's office and the Deputy Assistant Administrator's offices were most often involved with higher quality, higher cost special publications and conferences, particularly the Office of Energy Minerals and Industry. According to the interview results, consideration was nearly always given to the concerns of the Assistant Administrators of the other program offices when subjects in their areas were to be developed. The top management of ORD felt that they were in fact the research support arm of EPA, as a senior advisor to the Assistant Administrator stated. The Headquarters publictions and conferences in most cases concerned an aggregate of research programs in either a specific area or the whole area of recent EPA research and development highlights. The audiences were much larger than those reported for laboratory activities, and some of the special targets were reported to be: EPA and other Federal Agency decision makers, the Office of Management and Budget, and key Congressional staff members. While the audience-per-activity may have been larger than that of the laboratories and the information may have been developed for understanding by a less specialized group with environmental research concerns, the actual number of information transfer activities reported by the headquartes offices was quite small (32 actions) compared to that of most laboratories.

CERI

The Center for Environmental Research Information (CERI) in Cincinnati is the information operations arm of the Assistant Administrator's Office of Research Program Management. CERI's mission is to support laboratories and offices in the full range of information transfer product development, from the inital concept through to printing, distributing, storing and cataloging. Additionally, they are involved in their own information transfer activity, primarily producing special documents in the Technology Transfer Series. As a generalization, these are high quality special reports roughly similar to those produced by some Headquarters offices. In addition to consultation, services provided by CERI have included rewrite, editing, layout, art work photography, typeset, printing, distribution, and storage and response to requestors. Besides complete production, CERI has responsibility for numbering, categorizing, and sending to NTIS all ORD publications.

CERI, at present is only providing full service assistance on report development to a few laboratories. The reasons given in interviews for this current situation were two-fold. First, the availability of the services is not yet fully understood by the laboratories. Second, the laboratories must pay for the cost of the services, and many Laboratory Directors reported they would prefer to hire a contractor at their locations where they would have more control over the development of the product. In interviews, the CERI Director and staff members concurred with the need to improve the existing program.

CERI reported 62 actions during 1978. These included publications and special reports (18) conferences/seminars/workshops (14) and published papers (11).

Summary of Reported Activity

Exhibit II on the following page summarizes the reported information transfer activity of each of the organizations just discussed. This data was taken directly from the census sheets. 18 of the reported activities could not be related to a specific organization and they are included under the heading "not designated".

ORD Information Transfer Activity as Reported by Organization

Organization		Activity													
		Published Papers	Journal Articles	Speeches	Conference/Seminars/ Workshops	Publications/Special Reports	Other: Video/Films/ Announcement/Bulletin/ Law/Annual Report	News Release	Newsletter	Brochure	Public Meeting	Sub-Total	Project Reports	Total
Ada RSKERL		7	4	9	10	3	5		1	2		41	40	81
Athens ERL		4	10	1	12	1	3	26		1		57	20	77
Cincinnati	EMSL	19	6	10	5	6	3		8			57	16	73
	CERI	11	3	6	14	18			8	2		62		62
	HERL	8	5	4	4	1						22	16	38
	IERL		5	1	8		13					27	91	118
	MERL	45	24	113	13	11	5	1	2			214	93	307
Corvallis ERL		6	6					29	1			41	38	79
Duluth ERL		10	24	16	12	15	4			1	4	86	16	102
Gulf Breeze ERL		3			5	1	1		1			11	8	19
Las Vegas EMSL		22	5	3	25	27	6		2		1	91	43	134
Narragansett ERL		12	1	1	1	2						17	2	19
RTP	EMSL	2	4	3	5	3			1			18	19	37
	ESRL	5	29		8	2			1		3	46	66	112
	HERL	64	66	16	19	6	1				1	172	50	222
	IERL	48	8	15	25	14	5	27	8	17		167	113	280
	ECAO				3	8	3				4	18		18
Headquarters	OALWU				1				1			2	4	6
	OEMI					1					9	10	27	37
	OHEE				2	5		1				8	7	15
	OMTS			1	2	7	2					12	3	15
Not Designated		1		2		14	1					18		18
Total		267	199	201	172	144	52	83	34	23	22	1197	672	1869

EXHIBIT 11

The "project report" data was provided by CERI from their records and was not generated as a part of this study.

THE INFORMATION ACTIVITIES

Our reviews of the census data submitted and of the reports of interview provided us with a great deal of information about the various types of activities that make up information transfer in ORD. The following paragraphs and the exhibits in this section summarize those findings.

Project Reports

Project reports are a required product of every research project. We were informed by CERL that 672 of these reports were generated during 1978, by both ORD and external (contract) sources.

The Project Officers generally have broad discretion in determining the extent to which project reports will be used for purposes of information transfer. There is, however, a basic distribution ("the mandatory list') of 119 copies of each project reports. This list includes key EPA staff officers, EPA libraries, and some other Federal agency recipients and 10 copies to CERI for submission to NTIS. The minimum printing quantity is established by the mandatory list plus 50 for storage. However, printing of 500-600 copies of project reports are not uncommon. The Project Officer usually has the authority to order the printing, select the mailing list, and to order distribution.

Many of the researchers interviewed felt that most project reports were poorly suited as information transfer products and were of interest to very few people. The wide distribution of these documents was considered a very expensive way of getting highly specialized information to an audience that, in most cases, would not ordinarily request the information if they knew it was available.

We cannot comment on the quality of these documents. However, we were informed that if a particular project was considered exemplary, other means (usually a journal article, a special report or presentation of a paper) were ordinarily used to inform persons outside of EPA.

If the opinions expressed during our interviews were really reflections of the utility of these reports as an information transfer medium, it appears that significant costs are borne for printing and distribution of reports that provide little information transfer benefit.

Costs of printing project reports by CERI were estimated at $1.3 million. However, because printing is also contracted independently by the laboratories or other sources, we were told that these costs could amount to $2.6 million.

Published Papers

After project reports, the next largest number of information transfer activities reported by the offices and laboratories and verified by analysis and comprehensive interviews was the generation of published papers for conferences and symposia. These papers accounted for nearly 25 percent of all products other than project reports. Papers were initiated by one of two methods: (1) the researcher felt that his or

her work had generated significant findings in his/her field of scientific endeavor that should be reported or somehow officially communicated to his/her peers in an appropriate forum or (2) the researcher's work in his/her special field was sufficiently reputable and well known that he/she was invited by conference organizers to write and present a paper.

Researchers usually compose their papers independently. Requirements exist for varying degrees of review, often going to the level of the Laboratory Director, but time limitations for submission and acceptance of papers by conference committees usually require that papers be submitted to the internal ORD reviewers and the conference committees simultaneously. In effect, the researchers' papers go directly to the conference without official approval. The project team uncovered no instances, however, where a superior EPA office or laboratory official refused to allow presentation of an accepted paper because internal approval had not been granted. Additionally, to point out that at least informal quality control exists, all the interviewed individuals who had presented papers stated that, at a minimum, they had obtained several informal reviews by their peers, branch chiefs, etc., while drafts were in progress.

After presentation of the papers, the next step in the process involved publication of reprints and conference proceedings. Most of the reported conferences where EPA papers were presented, with the exception of several sponsored by EPA (where there were insufficient funds available for publication of proceedings), resulted in generation of proceedings. In some cases complete proceedings were published, and in others, such as the Air Pollution Control Association and the American Water Works Association, the conference papers subsequently were published periodically in the respective journals. In most cases in 1978, except as noted where sufficient funds were not available, papers presented at EPA conferences were also usually published as proceedings.

The EPA proceedings in 1978 were not always reported to CERI, and consequently, many were not printed with EPA identification numbers and were not reported to NTIS. It has been directed that after April 1979, all EPA conference proceedings will be published and reported to CERI and NTIS.

Whether for EPA or non-EPA conferences, a year to a year and a half was usually required from the time a paper was presented at a conference until it was available in a printed proceedings report or journal.

262 published papers were reported for 1978 and this accounted for approximately 1/4 of all information transfer actions of ORD (excluding Project Reports).

Journal Articles

Journal articles were very similar to published papers in their processing methods and content. The author either had a research finding to communicate, or was invited by a journal to submit because of his or her recognized expertise in the field. The same procedures were usually established for internal ORD review as for published papers and the same production and informal

review process was actually used, with the exception of several of the laboratories where peer review was strictly required within and outside the laboratory prior to submission. Technical Information Coordinators assisted the authors in submitting reprints to CERI for assignment of EPA identification numbers. An analysis of what was reported and what was available in CERI's files indicated an improving success rate of EPA identification of journal articles.

Journal articles were encouraged by laboratory management and were a popular form of information transfer from researchers to peers for professional reasons. One exception was a laboratory at Research Triangle Park where the statement was made that there was no time to prepare journal articles because all the resources were targeted at direct support of the program offices. At all laboratories, complaint was raised about the time and duplication required to prepare or review project reports of varying quality and usefulness, when journal articles and published papers could be prepared for the best ones and, after peer review, articles would be more useful to the program offices and available to research specialists and the general public as well. The long delay in final printing, as with published papers, was noted as a seemingly unsurmountable problem beyond the control of ORD.

199 journal articles were reported by the census indicating that this was the third most frequently used mode of information transfer.

Speeches/Oral Presentations Without Publication

Nearly as many speeches were reported in 1978 as published papers. The difference between the two is that written record of speeches was seldom available for review or distribution and, for the most part, the speech was a far more informal information transfer mechanism. The process consisted of the individual researchers volunteering or being asked to discuss their research findings at conferences, seminars, workshops, and special interest public group meetings. Since the presentation was usually informal, higher approval or review was not usually required unless travel money had to be requested for an out-of-town presentation. Reported subject matter ranged from a very specialized technical discussion of current scientific or engineering research to a general description of state-of-the-art research in the individual's field.

The findings from the interviews showed that the major appeal of speeches was that little or no review or paperwork was required, and research results could be discussed in essentially real time without the delays inherent in conferences or publications requiring official approval by peers and ORD. The process, in summary, was for the researcher to secure an invitation to make a presentation, gain approval to make the presentation, make the presentation, and no further accounting would be required. No documents were reported as being sent to CERI or NTIS, and presently there is no way to confirm the level of the subject or content of these speeches. The offices and laboratories reported 201 oral presentations during 1978.

EPA Conferences

The process for convening EPA conferences has for the most part been as informal as processes for the other information transfer activities described. Since April of 1979, this situation has changed somewhat with the requirement that the Office of the Assistant Administrator be notified in advance of planned ORD conferences. CERI is available to provide assistance in publicity, conference preparation if requested, and for arranging for printing the proceedings. In 1978, conferences were held at the discretion of the office head or Laboratory Director. The criteria for holding a conference was to "have enough significant results in a research area to generate interest and to have enough resources to be able to afford the conferences." The actual decision to hold the conference was usually made by informal discussion among the Laboratory Director, middle management, and key project officers. In 1978, the two criteria (significant results and sufficient resources) were met, and the decisions made, to organize 126 conferences on a wide range of scientific and engineering subjects at the four Headquarters Offices and 15 Laboratories. Conferences amounted to almost 10 percent of information transfer activity in 1978 at the laboratories and offices.

EPA Publications

EPA publications, according to the definitions of the Census Forms and interviews, are EPA ORD documents published in Series 8 or Series 9 (Series 1 through 7 are for the various subject categories of standard project reports).

EPA Special Reports are generally high quality printed special executive summaries of research findings. Series 9 publications include other such documents as bibliographies, conference proceedings, and annual reports. For the purpose of describing the process in this type of information transfer activity, we are considering here only those publications which were included in the CERI system and published with a unique identifying EPA number. Other similar publications which were produced, but not included in the EPA catalog system, are discussed as "other special reports" in the next section.

While there appeared to be no formal rules or criteria for justifying production and justification of these special reports, the information from the forms and the interviews indicated that, for the most part, EPA special publications were produced only for what were considered the most significant research results and were sent to the largest audiences -- usually the entire laboratory mailing list, several project officer's personal mailing lists, and often categorical or general mailing lists requested from Headquarters or CERI.

The project officer or officers, and occasionally the Technical Information Coordinator, would recommend to the Laboratory Director or DAA at the offices that a particular report or reports deserved a high quality production and distribution to a wide audience. If the Laboratory Director or DAA for the offices concurred, he or she hwould usually authorize hiring a contractor to work with the project officer(s) in producing the publication. This usually involved

typesetting, use of high quality paper, graphic artwork and photography (often color). On several occasions, laboratories sent their drafts to CERI which performed all the production functions, including printing and distribution if requested. The predominant laboratory preference, however, was to use a local contractor, since this was perceived to offer more laboratory control over details as production proceeded (and CERI had to be reimbursed for their work just as did a local contractor). This applied to series 9 Annual Reports, Proceedings, etc., as well as to special reports. Official ORD special publications amounted to about eight percent of the total ORD information transfer activity.

Other Special Reports

The process for production of what were classified as "other special reports" was identical to the process for EPA series 8 and 9 reports, with one exception. For whatever reason, the Laboratory Director or DAA decided that these special reports need not be included in the EPA catalog and reference system operated by CERI. On some occasions, a unique laboratory or office number was assigned and printed on the cover or inside the document. In some cases, however, there was only some printed indication that it was an EPA document produced by the specific laboratory or office. As a result, there was no consistent way for a user with possible interest (inside or outside ORD) to identify the existence of these special reports and obtain copies if desired, assuming, of course, he or she wasn't already on the initial mailing list. Headquarters interviewees described many of the special reports as having higher local public relations value than technical research value. The uncataloged ORD special reports made up nearly four percent of laboratory and office information transfer activity.

Seminars and Workshops

Seminars and workshops can be viewed in the ORD information transfer context as an extension of the speeches/unpublished oral presentations. The processes were similar, with the main difference being that a speech involved one individual researcher and seminars and workshops were usually conducted by teams of ORD researchers. There were seldom any proceedings or formal written records of seminars and workshops, nor any identifying number issued to identify their occurrence to CERI or any other catalog system, except in some cases where workbooks and manuals were produced.

Seminars and workshops occur with the approval of an Office or Laboratory Director when several project officers feel they have developed a new research protocol, monitoring method, or some other result that should be brought to the attention of or discussed with the scientific/academic community or perhaps Regional and state officials without the 1-1/2 year delay inherent in the publication of a journal article or conference proceeding. If the Laboratory Director concurs, the project officers and researchers proceed to invite the audience of their choice and organize and hold the seminar workshops. Reported duration ranged from one day to three weeks for those held in 1978. Principal locations are universities or federal or state office buildings.

Scientific findings were presented in a very informal atmosphere with open discussion and hands-on instruction on the method that was the subject of the seminar or workshop. Records or notes of the results of these meetings may be held privately by the participants. Seminars and workshops constitute almost five percent of ORD's inforamtion transfer effort.

PROCESSES FOR OTHER ACTIVITIES

To this point we have described the initiation, review, approval, production, and cataloging activity for over 92 percent of all ORD information transfer activities that were reported during 1978. The remaining 8 percent is comprised of eight groupings of categories described briefly here.

News Releases. In RTP and in Cincinnati, full time "Public Awareness" personnel direct or coordinate preparation and dissemination of news releases. In other areas, these are usually composed and sent out by the Technical Information Coordinators, or project officers through the Technical Information Coordinator, to announce what are considered especially significant current research results or actions. They are usually one or two pages, sent to the laboratory or office's mailing list, and also to the press and to Radio and TV stations. Besides a capsule review of the research, a report title and number and project officer's name and phone number is often included for further reference. At times, Laboratory Director or DAA approval was required before release, but the Technical Information Coordinator often had that authority from the Laboratory Director or DAA.

Newsletters. These differ in format from news releases in that they are periodic discussions of laboratory or office research results. They are, however, usually distributed both to the mailing lists and to the press. Many newsletters have been generated on a monthly basis in past years, but most of those reported in 1978 were quarterly publications. They are often the responsibility of Technical Information Coordinator, sometimes with and sometimes without the formal review and approval of the Laboratory Director or DAA. They do not have an CERI identification number and consequently are not cataloged. Besides summarizing research progress at a laboratory, some newsletters additionally synthesize the known information in a particular area, such as class of process development for control of specific pollutants.

Public Meetings. Public meetings were called by Laboratory Directors or DAA's on the advice of Technical Information Coordinators and project officers to provide informal open forums to explain to the general public the start up or the results of special research demonstration projects that have an impact on specific communities. These meetings are usually preceded and followed by news releases and other publicity. Examples of subjects for public meetings reported in 1978 were a major air pollution study in one city and a land disposition of sludge experiment in another.

Films. Two laboratories reported that they produced films in 1978. Both appeared to be special cases where a project officer had the background and training to produce films and to convince the Laboratory Director that a film was the most

effective method to explain the particular type of research result involved. There are no EPA numbers for the films and they are not listed in the standard CERI or NTIS catalogs.

Brochures. Technical Information Coordinators, with input from project officers, produced 12 brochures in 1978. These may be considered smaller versions of the special publications which do not carry an EPA identification number. The same process is followed as for special reports, except that Laboratory Director approval was usually not required, the text is usually geared more to the general public, and the use of color, photography, and graphic art was much more lower key. In effect, the brochures were less costly summaries of special reports information.

Announcements. These were used by five laboratories and office Technical Information Coordinators to publicize existing or forthcoming documents, conferences, or other information transfer activity. These were not published with EPA numbers.

Annual Reports. Four laboratories reported producing annual reports. These were coordinated by the Technical Information Coordinator, contributed to by the project officers, and approved by the Laboratory Director. They contain a review of the activities and progress by the laboratory during the year. Because they were felt to be internal records and public affairs documents, they were not printed with EPA numbers through CERI. Contractors were used for typeset, editing, photography, color, graphic art, and other technical production functions.

Mailing List. Only five laboratories and offices reported maintaining mailing lists on the Census Forms, but interviews revealed that all offices and laboratories maintain some form of mailing list. The list was one of the primary responsibilities of the Technical Information Coordinator in each organization. In addition, most project officers maintained personal mailing lists which sometimes were included in the overall laboratory or office list and sometimes were not. These project officer lists were reported as being for friends and colleagues that the project officer felt might be missed on a master list. Laboratory and office lists were developed from conference attendees, report requestors, and research peers known to the Technical Informtion Coordinator and the project officers. Laboratory listings ranged from several hundred to several thousand names.

While the volumes of product or activity have been discussed for each individual product, we have summarized the data on the actual number of products reported in Exhibit III following this page.

INTENDED AUDIENCE

The ORD Information Census for 1978 included a request for definition of the intended audience for each product reported. The information provided was intended to reflect the originally intended audience, however, the question may have also been interpreted to mean: "to whom would the activity or product be useful?" or "who received it?" In many instances more than one audience was indicated for a single product or activity.

ORD Information Census Volumes Reported

Activity	Number Responses	Relative Frequency (%) Without Project Reports	Relative Frequency (%) With Project Reports
Published Paper	267	22.3	14.3
Journal Article	199	16.6	10.6
Speeches	201	16.8	10.8
Conference	117	9.8	6.3
Seminar & Workshop	55	4.7	2.9
Publication	103	8.6	5.5
Special Report	41	3.4	2.2
Miscellaneous	20	1.7	1.1
Film	14	1.2	0.7
Announcement	8	0.6	0.4
Mailing List	6	0.5	0.3
Annual Report	4	0.4	0.2
News Release	83	6.9	4.4
News Letter	34	2.8	1.8
Brochure	23	1.9	1.2
Public Meeting	22	1.8	1.2
Sub Total	1197	100.0	64.0
Project Reports	672		36.0
Total	1869		100.0

Exhibit IV is designed to reflect the "dominant" intended audience for each of the activities reported. It clearly demonstrates ORD's current emphasis on communicating with the academic/scientific community.

COST OF INFORMATION TRANSFER ACTIVITY

The costs for information transfer activity were another item of information that was difficult to analyze for several reasons. In many cases, costs in dollars and person hours of individual activities were simply not reported on the forms. In other cases, it was obvious that total project costs were being reported, rather than only the information transfer portion.

To overcome these difficulties and arrive at a reasonably accurate estimate of information transfer cost for 1978, we used a combined methodology. First, we called project officers to obtain missing information directly where possible. Second, where there were obvious miscalculations, we called the project officers and explained how we would prefer for them to calculate person hours and costs. When these approaches were unsuccessful, we took the average of the apparently accurate information for each type and size of the 16 activities and used that average per-unit figure for the missing cost data. With that methodology, have developed a reasonably representative estimate of total and per-activity cost of information transfer in ORD for 1978. Exhbit V on the following page provides a breakdown of the total estimated costs of information transfer activities reported on the Census forms.

It was clear that the reported activities did not include all costs of information transfer. ORD Headquarters provided information on the total costs for maintenance of the Office of Technical Information and the CERI. These costs were reported to be an additional $2,250,000. The costs of printing standard project reports at CERI were estimated by CERI at approximately $570,000. This figure does not include the costs of reprints or the costs of storage or distribution. If these costs are added to our estimates, the total estimate would approximate $9.7 million. We believe that other unreported costs could increase this figure by 10% to 20% or $11 million.

EVALUATING THE ORD ACTIVITIES

In the preceding discussion, we have attempted to describe information transfer as it occurs in ORD. No attempt has been made to judge or evaluate these activities but only to set forth conditions as they exist. In the remaining sections of this chapter, we submit our assessment of the effectiveness of these activities and the conditions that contribute to limiting their effectiveness.

INFORMATION TRANSFER PROGRAM DEFINED

The reader will have been impressed with the extent of information transfer activity in ORD. The authors believe that it is essential to evaluate those activities together; in a "program" context, to determine if ORD truly is accomplishing the objectives of these activities. Information transfer is here defined:

> As the translation and communication of the results of significant research, through the most cost-effective medium or forum, to the appropriate user audience.

The use of the term "program" along with "information transfer" implies consideration of the interests -- not only of the members of other than federal government agencies and organizations -- but of other EPA organizations and outside federal agencies and their

Intended Audiences for ORD Information Transfer Products

Audience \ Activity	Published Papers	Journal Articles	Speeches	Conferences	Seminar/Workshop	Publication	Special Reports	Miscellaneous	Films	Announcements	Annual Reports	News Releases	News Letters	Brochures	Public Meeting
Research/Academic	♦	♦	♦	●	●	●	△	△	♦	●	●	♦	●	△	△
Design/Engineering	△		●	△	△	△			♦		△	♦	△	●	
State/Local Government	△		△	△	△	♦	△	●	♦	△	●	♦	♦	♦	●
Industry	△			△	△	●	△	△	♦	△	●	♦	●	♦	●
Other												△			△
Federal Government	△	△		●	△	●	△	△	♦	●	●	♦	♦	♦	△
EPA	△			△	△	●	●		●	△	♦	♦	●	●	●
Special Interest Groups						△			♦		●	♦	△	●	△
National				△		△	△			●	●	●	△		
General Public						△	△	△	●		△	♦	●	△	●
Total No. of Responses	267	199	201	117	55	103	41	20	14	8	4	83	34	23	22

CODE

This chart indicates percentage of instances a particular audience was cited on a census form for any particular product.

76% or More ♦

51% to 75% ●

25% to 50% △

Under 25% – No Entry

EXHIBIT IV

ORD Information Activity Cost Summary
Preliminary Estimate

Activity	No. Reported	Estimated Unit Cost	Total Technical Person	Total Support Person	Total Travel	Total Printing	Facilities & Admin.	Total Special Data Development	Estimated Activity Total
Published Paper	267	3,495	606,090	110,805	42,720	173,550	–	–	933,165
Journal Article	199	2,905	483,570	46,765	–	47,760	–	–	578,095
Speeches	201	1,520	194,970	29,145	54,270	27,135	–	–	305,520
Conference	117	$13,350	568,620	86,580	76,050	234,000	596,700	–	1,561,950
Seminar & Workshop	55	–	142,450	56,650	61,050	77,000	629,200	–	966,350
Publication	103	12,200	417,150	151,925	64,375	380,070	–	243,080	1,256,600
Special Report	41	6,425	132,840	36,285	6,150	28,290	–	59,860	263,425
Miscellaneous	20	4,280	48,600	7,400	6,400	3,600	–	19,600	85,600
Film	14	22,565	49,980	10,290	–	6,160	–	249,500	315,930
Announcements	8	1,680	6,480	2,960	–	4,000	–	–	13,440
Mailing List	6	3,330	11,670	5,310	–	–	–	3,000	19,980
Annual Report	4	16,650	24,640	14,760	–	13,600	–	13,600	66,600
News Release	83	525	26,975	12,450	–	4,150	–	–	43,575
Newsletter	34	5,810	88,230	20,060	–	31,450	–	57,800	197,548
Brochures	23	10,000	44,735	25,300	–	107,525	–	52,440	230,000
Public Meeting	22	2,755	28,600	330	880	–	30,800	–	60,610
Subtotals	1,197		$2,875,600	$617,015	$311,895	$1,138,290	$1,256,700	$698,880	$6,898,380
Printing and Project Reports (672)									570,000
Costs of OTI & CERI									2,250,000
TOTAL									$9,718,380

Notes:

(1) The number of activities reported here is the number of census forms classified in this category. Actual ORD activity rates may be somewhat higher in some cases due to under-reporting of some activities by some laboratories.

(2) Average salary of GS-12/5 at $26,167 assumed, plus a 48.7% adjustment for fringe benefits according to A-76 guidelines.

(3) Average salary of GS-5/5 at $11,970 assumed, plus a 48.7% adjustment for fringe benefits according to A-76 guidelines.

(4) This includes miscellaneous contract editing, layout, photography and other expenses.

EXHIBIT V

concerns with such matters as the consequences of ORD research on development and implementation of agency policy, the current status of regulatory and court proceedings, Congressional hearing schedules, public attitudes, and other matters external to ORD's immediate interests. The term "program" also implies that a number of organizational bodies, both within and without ORD might be involved in decision processes depending on the potential implications of information transfer activities.

PROGRAM CRITERIA

In our opinion, an effective information transfer program would have three basic characteristics. They are set forth here to proscribe the criteria by which we have evaluated information transfer as it is practiced in ORD.

1. Clearly defined policies and procedures for their implementation including guidelines for justification of information transfer activities and assignment of responsibility for assuring generation of high quality products or actions that are truly supportive of both ORD and EPA objectives and policy.

2. Effective mechanisms for identifying and reaching audiences of interest or concern. These would include active and continuing programs to identify and categorize by areas of interest, persons or organizations that are concerned with subject matter addressed by ORD. These mechanisms would assure conscious determination and approval of audiences to be addressed by each individual information transfer activity.

3. A record system that allows identification and cataloging of all information transfer activity and a capability for retrieval of referenced products or abstracts describing activities that do not result in published documents.

PRINCIPAL DEFICIENCIES

The following paragraphs cite the principal deficiencies noted in our review of the information transfer activities of ORD.

No Clear Statement of Policy Concerning ORD's Information Transfer Responsibilities

With the exception of an "interim general guidance" memorandum on the subject and statements relative to reporting of conferences and some other types of activities, there is no clearly definitive statement of policy as to ORD's position on information transfer. Considering the identified cost of these activities and the professional resources diverted from research and development or demonstration efforts, this would appear to be a glaring deficiency with significant implications on the realization of the ORD mission.

No Definition of Acceptable Justifications for Allocation of Resources

We found that a number of information transfer activities occurred for reasons that appeared to bear little relationship to the basic mission of ORD. For example, some of the researchers indicated that they were responding to the

academic adage of "publish or perish" and that a number of the actions taken were to establish or enhance their personal prestige in the scientific community. We were also told that project reports, having little professional merit or marginal programmatic implication, received wide distribution (or at least large printings) at the direction of the project manager. It is our understanding that, in many cases, justification is not required beyond the desire of the individuals suggesting the actions.

No Mechanisms Exist for Definition of Priorities of Activity

Information transfer activities appear to occur following recognition of a project of merit or of the desire of an individual to take such an action. We found little evidence in the laboratories of planning which cited areas in which such transfer activity was required. In other words, these activities seemed to occur in a reactive mode rather than from the perspective of actions taken to meet a planned need. Most activities were recommended from the staff level rather than directed from the management level and there is little apparent input from organizations external to ORD concerning their need for information transfer activity.

The Assignment of Responsibility for Review or Approval of Activity is Not Consistent nor Based on Clear Criteria

Products evaluated during the course of our inquiry varied widely in their importance or potential impact on the EPA mission. We found that the review or approval processes were neither consistent or necessarily based on the potential impact of the product.

Heavy Dependence on Individual Actions May Limit the Effectiveness of the Program

An analysis of modes of transfer selected by ORD personnel shows that the dominant forms of transfer are highly individualized. Published papers (22.3%), journal articles (16.6%), and speeches (16.8%) made up almost 56% of all actions reported (not including project reports). These are products developed by persons and not organizations and are seldom planned or budgeted.

These activities accounted for 46% of the estimated professional costs associated with information transfer in ORD (other than those associated with project reports). Most of this activity was addressed to the scientific/technical community and it is clear that most of the other activities have this group as the dominant audience as well.

Some of our interviews confirmed that, in many cases, the motives of researchers for involvement in these activities were highly personal; generally directed toward the enhancement of their individual professional reputations ("publish or perish"). We suggest that such heavy dependence on individual action generates a fragmented and potentially inconsistent approach to information transfer. It may also result in products or actions that are only marginally effective in promoting ORD's reputation or accomplishment of its mission.

Capabilities for Communicating with "Non-Technical" audiences are Marginally Applied

The laboratories appear to direct almost all of their information transfer activities toward the technical/scientific community. Individuals in those organizations do recognize that there is a need to communicate with other audiences, however, they have little confidence in their ability to effectively address those "non-technical" audiences. The laboratories also recognize that CERI has resources available to translate technical material for non-technical audiences. We were told that the laboratories avoided use of CERI in favor of contractors because: "we'd lose control of the project once we passed it to CERI" and "we only know how much it will cost if we get a contractor to do it."

Interestingly, many researchers felt that their audience was the research community and "headquarters is responsible for communicating with the general public".

ORD's "Non-Federal" Audience Listings are Informal, are Fragmented, Lack Reference Capability and are Probably Incomplete and Redundant.

Mailing lists were maintained by almost all of the laboratories and offices visited. In addition, many project officers and researchers maintained personal lists of individuals to whom they assured distribution of their reports or other products.

Characteristically, these lists have been built up over the years, by including names of individuals or organizations who have, in the past evidenced interest in the activities of a particular laboratory or office or who had attended conferences or seminars. Normally, these lists are not classified or categorized by type or by areas of interest. Headquarters does have a listing of approximately 17,000 which is coded by area of interest of the listees but availability of this type of list to the laboratories is apparently limited.

With the exception of one laboratory in Cincinnati and one at RTP, we were not able to identify other significant efforts to "build" audience listings of persons who should receive information from ORD. These two laboratories have retained contractors to build and categorize by type and area of interest, a listing of potential recipients for their materials.

List development is generally reactive rather than "pro-active, allows minimal discrimination in selection of audiences, gives little assurance that a large segment of an audience of interest will be reached and the use of more than one listing in a distribution may result in duplication of transmittals as few listings allow edit for duplication in combined lists.

Audience Selection is Seldom Performed Until After Product Development

Only after development of a product are listings referenced to determine who might benefit from receipt of the information. Audience selection should occur prior to selection of a medium and the finalizing products or

activities to assure that those products and activities are designed to meet the information needs of a particular audience.

Records of Information Transfer Products are Unreliable and No Central Record of "Non-Product" Activity Exists

All written/published materials are supposed to be assigned an "EPA Number" and be recorded by CERI and at NTIS. The only type of published document that was assured of being included in this process was the standard project report. There is no consistent level of discipline to assure that other types of products are so recorded.

Other activities, such as speeches, unpublished papers, seminars, and even conferences sponsored by ORD go unrecorded.

As there was no central record of all information transfer activity, anyone with interest in determining what information is available in a particular area or which has been transmitted and by whom or in obtaining copies of previously published materials in an area of interest could only do so after exhaustive reference to the many independent sources of such material. Even then he could have little assurance of complete success. Such a condition not only demonstrates the fragmented nature of ORD's information transfer program but could actually limit the effectiveness of ORD's research program.

CHAPTER III
RECOMMENDATIONS

Our review of ORD's information transfer activities has confirmed that no cohesive information transfer program exists but that such activities occur, primarily, on an ad hoc basis. We have also demonstrated that these activities are costly and that there is little assurance of their cost effectiveness. We believe ORD should take immediate steps to implement the following recommendations:

1. Define Policy for Establishment and operation of an ORD Information Transfer Program

A common definition of the goals of information transfer in ORD and of the responsibilities for achieving those goals does not exist. Nor is there an effective definition of the associated issues and priorities pertaining to the application of ORD resources in achieving those goals. This has resulted in establishment of conflicting objectives among the component elements of ORD, unequal treatment of ORD's constituancy requiring ORD generated information, expenditure of funds for products which make limited contribution and shortage of funds to accomplish activity which could contribute to achievement of ORD's mission.

The statement of ORD information transfer policy should:

- Define information transfer and the legitimate purposes of such activity in ORD
- Direct the establishment and maintenance of priorities of information transfer activity concerning subject matter, audiences, and medium
- Define the types and levels of authority and responsibility for realizing the program
- Direct the establishment of budgets and controls for accomplishing the objectives of the program.

2. Develop and Maintain Procedures for Program Implementation and Operation

A $11 million program, involving a diverse and geographically disbursed organization, without clear central direction for realization of policy has little potential for success. Such definition is essential to achieving a consistent approach to program implementation and operation and to allow evaluation of the performance of the component organizational elements.

We propose that ORD prepare a program manual that will, in addition to ORD policy, define the organizational and procedural requirements of the program and guidelines for decision-making at the operational unit level. The basic structure of the manual should concentrate on the four basic process elements of the program:

- Activity approval and development
- Audience development and selection
- Distribution of information products, and
- Maintenance of the reference system.

3. Expand the Audience Base for ORD Information Transfer

ORD information transfer activity is primarily addressed to the academic/scientific community. Comparatively little attention is currently given to those who make

decisions concerning accomplishment of environmental objectives or even to those who determine the resources to be made available to ORD. Without dissemination of information to those who can apply it or who need it as a basis for decision making, the real benefits of the efforts of ORD cannot be realized.

Definition of audience is an essential step in justifying proposed activities. Only with such definition can the necessary orientation be established and proper resources be applied for preparation of effective information transfer actions.

ORD should define all of the potential audiences of concern and identify (as completely as possible) the target individuals in each of those audience groups. Computerized listings should be maintained centrally and be made accessable to those responsible for information transfer activity.

4. Expand the Availability of Information Specialists

Most researchers are neither trained or motivated to communicate effectively with audiences other than their peers. There is a significant difference between professional competence in a technical field and skill in presentation. Efforts to expand ORD's audience beyond the scientific/academic community will be frustrated unless assistance is available to the laboratories and offices for preparation of effective information transfer products.

Information Specialists should have an adequate background in the sciences so they may be responsive to and gain the confidence of ORD's scientific managers and staff. They must also be competent in translating scientific material into concepts and ideas readily understood by selected audiences lacking scientific or technical backgrounds.

While some laboratories and offices may be large enough to support their own staff of information specialists, procedures (and financial incentives) must be established to promote and facilitate the use of information specialists by any organizational component that has need of these skills.

5. Establish Consistent Distribution Mechanisms

The maintenance of separate audience listings by each laboratory and their use in distribution of information products results in transmittal of some material to inappropriate audiences and potential omission of individuals or groups who would benefit from receipt of materials.

Central listings should be utilized for distribution of materials.

6. Maintain a Central Reference System for All Information Transfer Activity

Lack of a central reference capability, reflecting all information transfer activity, precludes effective access to available materials and therefore an important source of research information. It also inhibits ORD's ability to evaluate the status of the program and the extent to which resources are being applied to address the priority issues established by ORD policy.

A central information bank should be established (ideally an extension of the existing Bibliographic Information Retrieval System (BIRS) that will include the basic reference as well as all information necessary for retrieval or access to the material or source. Programs should be established for summarization or grouping of this data for research reference or for development of management reports. Controls must be established to assure input of data on all activity.

7. Evaluate the Utility of the Project Report as an Information Transfer Medium

Project reports receive wide distribution. Printing and distribution is costly. The presentation quality of these products varies widely and researchers have low regard for the technical content or consequence of "most" of them. They have indicated that projects of consequence are generally written up in other forms to assure meaningful transmittal of project results. In addition, there is little control to assure that these documents properly reflect or are consistent with EPA/ORD policy, practice, or program concerns.

It is suggested that distribution of project reports might be severly curtailed without undue impact on ORD's mission.

8. Plan and Budget Resources for Accomplishment of the Information Transfer Program

Levels of information transfer activity vary widely from organization to organization in ORD. Reasons given were lack of financial resources and/or lack of special capability needed to perform in these activities well. As information transfer is considered essential to ORD's mission, these constraints must be overcome. Funds should be specifically allocated for accomplishment of planned levels of information transfer activity and budgets should clearly define the expected levels of accomplishment.

MAIL COMPLETED FORM TO INFORMATION CENSUS, ORPM (RD 674), WASHINGTON, DC 20460 BY MAY 1, 1979

APPENDIX A

ORD INFORMATION CENSUS FOR 1978

Report on all completed or active information transfer activities by your office or laboratory in calendar year 1978 except technical project reports (Series 1-7) and EPA in-house program review meetings.

TYPE OF ACTIVITY (Check one):

Conference ☐ Newsletter ☐ Brochure ☐ nouncements ☐ Seminar ☐ Journal Article ☐
Mailing List Development/Maintenance ☐ Film ☐ Publication ☐ News Release ☐ Public Meeting ☐
Annual Report ☐ Published Paper ☐ Other (specify) ☐
If this activity was based on a research project supply project title, _____ project officer's name _____ and ORDIS No. if known.

INTENDED AUDIENCE (Check one or more):

EPA Regulatory ☐ State/Local Government ☐ General Public ☐ Design/Engineering Community ☐
Federal Government ☐ Research/Academic Community ☐ Industry ☐ Special Interest Groups ☐
National ☐ State ☐ Regional ☐ Other (specify) ☐

PURPOSE OF ACTIVITY: _____

_____

_____

FOR CONFERENCES, SEMINARS, PUBLIC MEETINGS:

Title, location, date: _____

No. of persons invited: _____ No. of persons attending: _____ No. of participants: _____

How was it publicized? _____

Criteria for invitation (sources for mailing list): _____

Proceedings available: No ☐ Yes ☐ If yes, complete publication section.

FOR PUBLICATIONS (Enclose sample):

Title, date (Journal name and volume if applicable): _____

Criteria for distribution (Sources of mailing list): _____

Number printed: _____ Frequency: _____ No. stored: _____ Where? _____

No. distributed: _____ Total pages: _____ EPA publication no.: _____

OTHER—DESCRIBE: _____

If this activity was reported to any central clearing house distribution system, either computerized or not, identify the system (e.g., NTIS, ERIC Cincinnati) _____

RESOURCES FOR THIS INFORMATION ACTIVITY (Estimated):

EPA technical person months _____

EPA support person months _____

Other in-house costs except printing (include travel) Dollars _____

Printing cost Dollars _____

Total extramural costs (Grant/Contract No. _____) Dollars _____

Total cost for this activity Dollars _____

Laboratory/Office _____ Prepared by _____

Program Element No. _____ Phone No. ( ) _____

APPENDIX B

SUGGESTED CONTENT FOR THE PROPOSED PROGRAM MANUAL

In the course of framing the recommendations for inclusion in this report, certain concepts to the approach to program development were outlined. The following paragraphs are intended to illustrate the types of materials and definitions that might be included in ORD's Information Transfer Program Manual.

DEFINITION OF POLICY

The policy section of the manual will define information transfer as an essential ingredient of ORD's mission.

- It will set forth the objectives and legitimate purposes of information transfer activity in ORD
- It will direct the establishment of priorities of information transfer activity both in terms of subject matter and audience
- It will define the types and levels of authority and responsibility pertinent to the program
- It will direct the establishment of budgets for accomplishing the objectives of the program.

We have given some thought to the content of some of these segments of the policy statement and suggested language might include:

The Objectives of Information Transfer

Information transfer takes three basic forms; it is used to instruct, to inform, or to advocate. A single activity may accomplish a combination of all three in varying degree. Each activity to be performed in ORD shall be justified by accomplishing at least one of the following objectives:

- Direct and immediate support of the development or enforcement of EPA regulation

  Examples of such activity could be confirmation of technology required to meet standards or the demonstration of new monitoring techniques to be applied by state enforcement agencies or industry management to assure compliance.

- To foster and promote near term improvement in environmental conditions

  Examples of such activity could be a design manual for accomplishing improvement in sludge treatment facilities or a promotion booklet directed to executives that such a manual is available and describing the economic and operational benefits of making such improvements in their facilities.

- To enhance understanding of ORD programs and activities

  The defintion of "public" can encompass any entity outside of EPA, including congress, OMB, and other Federal agencies. Medium can include press releases, magazine articles in general publications, information packages for congressional staff, "special reports", etc. The purpose of these activities must always be directed toward assuring "informed" decision making by

those whom EPA serves. All care will be taken to assure that such activities demonstrate EPA's dedication to it's defined mision and it's "balanced" strategy for its accomplishment.

- To inform the scientific community

ORD's research organization has a responsibility to the scientific/academic community to share its findings that can contribute to the "body of knowledge in specialized areas of research. Such activities as presentation of scientific papers at conferences or articles in scientific journals can contribute to the state-of-the-art and can encourage interchange of knowledge within the diverse scientific community. This type of activity also encourages external research in ORD's areas of interest by external groups, expanding the resources applied to EPA's research programs.

Establishment of Program Plans

Information transfer activity in ORD shall be planned and budgets will be established for accomplishment of the Program. The Assistant Administrator shall provide guidelines for development and maintenance of these plans and budgets for each office and laboratory in ORD. Guidelines shall pertain to all activities addressed to formal transfer of information (other than correspondence) to agencies and other entities outside of ORD. The guidelines shall include:

- Definition of emphasis to be placed on the several legitimate purposes of information transfer (the percentage of resources to be applied to those several purposes)
- Definition of the subject areas (drinking water quality, fresh water eco systems, solid waste, etc.) that are to receive priority attention and those that should receive minimal application of resources
- The approximate budget ranges to be considered in developing plans
- The format and content of plans and proposed budgets (procedures section)

These guidelines shall be consistent with EPA-wide priorities of concern and, to the extent possible, shall be coordinated with Assistant Administrators of other offices.

Offices and laboratories will be expected, where possible, to schedule information transfer activities planned for the coming year as well as the levels of assistance to be required of other offices and contractors and this information will be provided in their plans. The anticipated levels of printing and distribution of project reports, beyond the number required for internal EPA distribution and record shall be included as a part of the program.

Responsibility for Program Implementation

Laboratory and Office Directors shall have the

responsibility for implementing assigned and budgeted elements of tne program and they shall establish internal mechanisms to assure compliance with the intent of the program as well as the defined requirements. Internal review and approval procedures shall be adequate to:

- Confirm that each activity is consistent with ORD established priorities and fully justified before commitment of resources
- Assure that activities are developed to be entirely consistent with the information needs of the audience to be addressed
- Assure that activities and products are reviewed and approved at a level consistent with the financial impact as well as the program or policy implications of the effort.

PROCEDURAL GUIDELINES

In development of procedures for implementation of its information transfer programs, ORD should structure them to reflect the three basic components of the program (1) activity approval and development (2) Audience selection and (3) Distribution and reference capability. Each of these components require special consideration and the following paragraphs suggest important elements to be included in procedures that will define how they should be accomplished.

Activity Approval and Development

This component comprises all of those action's prior to the actual distribution or performance of an information transfer product or activity.

- The Laboratory or Office Director shall assure distribution of the current program plan and budget to his senior personnel including definition and assignment of "target" efforts and will notify them of any revisions received from AA ORD.
- Information transfer activities shall be proposed and be approved prior to commitment of resources. A proposal shall include:
  - A brief description of the proposed activity
  - Definition of the target audience
  - The implications or benefits to be derived (justification of the effort)
  - Definition of resources required (personnel and budget) and impact on current project schedules.
- Proposals shall be reviewed by the Technical Information Coordinator (TIC) to assure consistency with the ORD program plan and the laboratory or office plan and budget. The TIC shall make recommendations as to product review requirements and note apparent need for headquarters approval. The proposal (with endorsements) shall be submitted to the laboratory or office director for approval.
- Proposed activities with significant budget implications, which pertain to sensitive policy or program

issues, or which anticipate direct participation of personnel of other federal agencies or governmental organizations will be forwarded to the DAA and/or AA levels for final approval.

- On approval, required resources will be assigned and review procedures established. Publications which will include significant amounts of graphics in presentation should be reviewed by CERI to assure a consistent level of quality. Publications intended for audiences other than the scientific/academic community should be final edited and produced at CERI to assure that the presentation is consistent with the requirements of the intended audience.

- The TIC shall be responsible for assuring assignment of EPA control numbers by CERI to each product or activity and for confirming run size and audience listing selection before production of the product is ordered.

Audience Selection

ORD should establish a master listing of potential audiences for information transfer products to be generated. This listing should be the product of significant research into the organizations and individuals with high or potential interest in the activities or determinations of ORD. The listing should be computerized for ease of maintenance, access, and analysis. Each entry in the list would be coded to identify the class or category of the individual and the known areas of interest of that individual. This listing could be maintained (at CERI) by continuing reference to rosters, directories, catalogs, etc. as well as through direct input from laboratories and offices and other EPA sources.

It is important that such a list be maintained centrally to assure continuing attention to it's maintenance, availability of the widest selection of audience, and to minimize redundancy of entries and effort.

The audience size will be estimated in each proposal. The TIC shall, on receipt of a proposal for an activity, request a count of the members of the audience of interest from the master listing. He would do this by reference to the "category" and "interest" codes of the proposed audience. This information shall be included with the endorsement of the activity proposal which is forwarded to the director, along with a recommendation as to whether full or selective distribution should be anticipated or if a proposed product should be "announced" as available on request. Distribution strategy could, of course, have great implications on the proposed project budget.

Production and Distribution

Production run size of printed materials will ordinarily be a function of the number of the audience selected. However, final determination of production run size should be made by CERI based upon an assessment of the potential number of requests for the document after initial distribution. The initiating laboratory or office should only be liable for the cost of production of the quantity needed to meet the selected audience

requirement. CERI will ordinarily retain a supply of "special production" (other than black and white offset) items and will be responsible for responding to requests submitted after the initial distribution. CERI shall make all determinations as to compliance with NTIS requirements.

CERI shall normally approve the production source of printed products (if they do not arrange for that service themselves) and shall normally arrange for distribution of printed materials. This will include both initial distribution and response to requests following the initial distribution.

Reference and Control

CERI shall maintain a record of all approved information transfer activities. This record will be used as a research reference and to provide Headquarters with current information as to the amounts and types of information transfer activity of the offices and laboratories. This record shall be computerized (and ideally, a development of the existing BIRS). File content would include such information as:

- Title of activity and medium (special report, speech, etc.)
- Brief abstract of the product
- Authors
- Office or laboratory responsible
- Audience addressed and initial distribution
- Retrieval source (location of copies)
- Code if special approval is required for release (example: prepublication copies of journal articles)
- Key word reference.

Copies of all approved activity proposals shall be forwarded to CERI as an initial control in establishing the reference file. On receipt, CERI will assign an EPA control number (publication number) and forward it to the TIC at the proposing location. This number shall be applied to all materials and correspondence concerning the activity. CERI shall establish and maintain a control file over all "in-work" activity until such time as each is completed and entered into the reference system (BIRS).

CERI shall maintain a control copy of all documents, publications, papers, reprints, speech abstracts, conference reports, etc. that are included in the reference system. The basic groupings would be:

- Project reports
  - Limited distribution
  - Expanded distribution
- All other ORD publications
- Copies of unpublished speeches and papers
- Papers or articles published outside ORD (both submitted original and reprints)
- Reports on ORD sponsored conferences, seminars, workshops and symposiums
- Bibliographies.

CERI will be responsible for performing bibliographic searches on request and for acquiring copies of required documents. Procedures shall be established for approval of such requests and for allocating costs of providing these services.

MANAGING INFORMATION TRANSFER ACTIVITIES

The preceding paragraphs have provided some general guidelines for establishment of the program. The proposed manual should also include instruction as to use of the several mediums of information transfer. The format should be simple and content generally limited to how each type of activity might vary from the norm or special considerations in administration of their use. The following paragraphs set forth some of those considerations.

Project Reports

Justification. A project report is justified by the ORD requirement that they be prepared at the conclusion of each assigned research effort, whether in-house, contract, grant, or by interagency agreement. The project report stands as the public record of the project and is sent directly to CERI for delivery to NTIS. No approval authority is required to produce such a report beyond that of the project officer unless distribution of the report is planned. The project officer must assure that such report is prepared to ORD standards.

In some special cases, project reports may be of sufficient interest that wider distribution is warranted. In these cases, they become an information transfer activity to be justified in terms of ORD priority subject matter, potential audience interest, and estimated cost of expanded printing and distribution.

Approval The project officer responsible for the project report must justify printing and distribution to the laboratory or office director. The director has final approval authority for making the project report a regular information transfer product.

Production and Distribution. Project reports approved for wider distribution than NTIS shall be sent to CERI for printing and distribution after the camera-ready copy is produced by the project officer.

Records. CERI will provide the EPA identification number, maintain reference record and submit copies of the reports to NTIS.

Special Reports

Justification. Special reports comprise a wide range of published materials and usually are addressed to relatively a large audience. In most cases, they are concerned with matters of broad interest and special attention is given to their content and format. They range in appearance from a basic typed report to typeset, utilizing quality graphics and artwork (sometimes in color) and folio or perfect bound products.

These documents are generally both expensive to produce and are widely distributed. They cover a wide range of subjects and may be utilized to realize a number of objectives. Full justification is required and each proposal must be initially approved at the office or laboratory director level. The director will determine if the subject matter is of adequate sensitivity (executive summaries, issue papers) or if the anticipated audience includes groups requiring special attention (congress, high level state officials, etc.) to require approval at the DAA or AA level.

Approval for Production. All special reports will be approved by CERI for production. CERI shall confirm that required reviews of content are accomplished prior to ordering production, these requirements having been established in the approved activity proposal.

Production and Distribution. CERI shall either direct the production and distribution of special reports or shall authorize the performance of these activities by the offices or laboratories. Assignment of this responsibility by CERI shall be made on a project by project basis. No blanket approvals to a particular organization shall be made.

Records. Special reports shall meet all control requirements.

Journal Articles and Published Papers

Justification. The primary objective of these types of activity is the sharing of information with the scientific/academic community although ORD will seek opportunities to be published in more general interest publications then the technical journals. In addition to the objectives of sharing such information, the external peer review and approval process associated with such activity generally promotes the technical credibility of ORD's research and is considered highly desirable.

While such activity is encouraged, it must be remembered that time spent by researchers in preparation, internal review, and presentation (at conferences) reduces the research capability of ORD. As such, each such activity must be approved based upon the special merit of the subject matter and the existing priorities of the laboratory or office concerned.

The laboratory or office director can approve such activity.

Approval for Production. Production in these activities amounts to submittal of the paper or article to the external source.

The director shall identify, at the time he approves the proposal, two individuals who will perform internal peer review. On completion of the peer review and confirmation of merit, the director (or his designee) will approve submittal (and attendance at the conference if warranted).

Production and Distribution. Generally, no production or distribution of these materials may be effected by ORD prior to their presentation or publication. The TIC shall be responsible for providing a copy of the materials to CERI at the time they are submitted to a journal or conference committee. The TIC shall be responsible for acquiring reprints or copies of conference proceedings and for their submittal to CERI.

Records. CERI shall establish a reference record in BIRS on each such activity. A code will be entered to assure no distribution until after publication. CERI shall be responsible for assuring compliance with copyright requirements.

Conferences

Justification. On a unit cost basis to ORD, conferences are the most expensive form of information transfer activity and the basic cost is expanded significantly when the time of the attendees is considered. The audience reached is relatively small as compared to other modes of information transfer.

Conferences are usually justified by the necessity of realizing a near term generation of current information on

matters of significant interest or concern, from sources that would be difficult to query in any other manner. They also are useful in generating interest in such matters where normal modes of information transfer have been ineffective.

Approval of conference proposals will be at least at the DAA level. Conferences addressing sensitive or high priority areas or audiences shall be approved at the AA level.

Production Approval. The full agenda and plans for the conference will be approved at the DAA level prior to announcement of the conference.

Production. CERI shall provide, or approve provision of conference support materials including announcements, publicity, displays, etc.

Proceedings will be generated for all conferences. The requirements for Special Reports apply to production of these proceedings.

Record. The conference manager shall prepare an interim report (prior to publication of the proceedings) on the conference providing information on the subjects, attendees, and results of the activity. CERI will enter the required information into BIRS and retain a copy of the interim report for reference.

Seminars and Workshops

Justification. ORD considers seminars and workshops to be a valuable means for timely transmission of state-of-the-art research developments to small and highly selective audiences. Considerations in approving seminars and workshops must include cost, the number of recipients and the benefit they and EPA will receive from the activity, and the real value of the information to be transferred. In proposing seminars and workshops, researchers should make maximum use of government or university facilities and hold their own and attendee travel distances to a minimum.

Approval. In proposing a seminar or workshop, researchers should present the office or laboratory director with an outline of the material to be covered, the proposed site or sites, and the tentative list of attendees. Seminars tend to be instructive and academic in presentation. Workshops are more informal presentations, usually with hands-on instruction in a new method of analysis or for group resolution of a specific problem. The audience, consequently, is generally made up of EPA, state, and local environmental engineers and scientists. When the laboratory or office director receives the proposed outline and attendance list from the initiator(s), he or she is responsible for evaluating the technical content in terms of ORD program priorities, the proposed audience, and the estimated costs and benefits. He or she has the authority for approving seminar or workshop activity.

Production and Distribution. Once approval is given for a seminar or workshop, the initiators have full responsibility for acquiring an appropriate site, preparing the content of the presentation, inviting the approved audience, conducting the seminar or workshop, and preparing a summary and list of attendees.

Record. The researcher in charge of the seminar or workshop is responsible for submitting, through the Technical Information Coordinator to CERI, the summary of the presentation together with the list of attendees. CERI will log the summary with an ORD identification number and file it for the record and future reference.

Newsletters

Justification. Newsletters keep the interested public (as well as persons inside ORD) routinely aware of current research developments, activities, and anticipated work. These newsletters should include a summary of current research, a listing of recent or forthcoming information transfer activities, and people to contact for more information. This average length would be 3-4 pages.

Approval. No proposal is required after establishment of the activity. Newsletter content will be approved prior to publication at a level determined by the office or laboratory director.

Production and Distribution. The Technical Information Coordinator, with input from individual researchers, is responsible for producing the newsletter and recommending the audience. Assistance from CERI is available if desired. The laboratory or office director has final approval authority for the content and format of the newsletter and for distribution to the appropriate audience.

Records. Newsletters will be forwarded to CERI for inclusion in BIRS.

Speeches (And Unpublished Papers)

Justification. ORD encourages the use of the public platform as a means of informing the public of the activities, areas of interest, and positions of both ORD and EPA generally. This mode has the advantage of giving a personal identity to the organization and, usually, allows a more informal environment to information transmittal than other modes.

Approval of this type of activity is usually at the option of the office of laboratory director. However, the subject or the audience may dictate approval at a higher level.

Approval for Presentation. The requirement for review of the speech prior to presentation will be established at the time such an activity is proposed.

Record. A copy of each speech or an abstract (depending on the formality of the presentation) shall be provided, through the TIC, to CERI.